

CLAIMS

1. An image signal processing apparatus for use as a preprocessing apparatus for an image display apparatus that displays images in accordance with color image signals, comprising:

an image signal receiving means for receiving a color image signal; and

10 a chromaticity adjustment means for performing a calculation using signal values of the received color image signal and adjusting the chromaticity of an image to be displayed by the image display apparatus for each of primary colors red, green, and blue, separately.

15 2. The image signal processing apparatus of Claim 1, wherein the chromaticity adjustment means includes:

a matrix operation means for multiplying the signal values of the received color image signal with a determinant;

20 a parameter receiving means for receiving a predetermined parameter; and

a determinant changing means for changing the determinant in accordance with the received parameter, wherein

25 the chromaticity adjustment means adjusts the chromaticity for each primary color by performing a calculation using the changed determinant.

signal processing apparatus of Claim 1, wherein the chromaticity adjustment means includes

a gamma correction means for performing a gamma correction on the color image signal, and

5 the chromaticity adjustment means performs a calculation using signal values of the color image signal on which the gamma correction was performed.

4. The image signal processing apparatus of Claim 3,
10 wherein

gradation conversion characteristics in the gamma correction means are substantially equal to gradation conversion characteristics required to correct gradation reproduction characteristics of a display device of the
15 image display apparatus.

5. The image signal processing apparatus of Claim 3
further comprising

20 an inverse gamma correction means for performing an inverse gamma correction on the color image signal output from the chromaticity adjustment means.

6. The image signal processing apparatus of Claim 1,
wherein

25 the received color image signal is a YUV signal,
the image signal receiving means includes
a signal conversion means for converting the

received YUV signal into an RGB signal, and

the chromaticity adjustment means adjusts the chromaticity for each primary color by performing a calculation on signal values of the RGB signal.

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7. An image display apparatus, comprising:

an image signal preprocessing means for preprocessing a color image signal; and

10 an image display means for displaying images in accordance with the preprocessed color image signal, wherein

the image signal preprocessing means includes

an image signal receiving means for receiving the color image signal, and

15 a chromaticity adjustment means for performing a calculation using signal values of the received color image signal and adjusting the chromaticity of an image to be displayed by the image display apparatus for each of primary colors red, green, and blue, separately.

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8. The image display apparatus of Claim 7, wherein the chromaticity adjustment means includes:

a matrix operation means for multiplying the signal values of the received color image signal with a 25 determinant;

a parameter receiving means for receiving a predetermined parameter; and

a determinant changing means for changing the determinant in accordance with the received parameter, wherein

the chromaticity adjustment means adjusts the 5 chromaticity for each primary color by performing a calculation using the changed determinant.

9. The image display apparatus of Claim 7, wherein
the chromaticity adjustment means includes
10 a gamma correction means for performing a gamma correction on the color image signal, and
the chromaticity adjustment means performs a calculation using signal values of the color image signal on which the gamma correction was performed.

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10. The image display apparatus of Claim 9, wherein
gradation conversion characteristics in the gamma correction means are substantially equal to gradation conversion characteristics required to correct gradation 20 reproduction characteristics of a display device of the image display apparatus.

11. The image display apparatus of Claim 7, wherein
the received color image signal is a YUV signal,
25 the image signal receiving means includes
a signal conversion means for converting the received YUV signal into an RGB signal, and

the chromaticity adjustment means adjusts the chromaticity for each primary color by performing a calculation on signal values of the RGB signal.

5 12. A multidisplay apparatus for allowing a plurality of image display units to display a plurality of images side by side on a screen, comprising:

an image distribution means for generating, from a received color image signal, a plurality of color image signals for a plurality of images to be displayed

10 respectively by the plurality of image display units; and

15 a plurality of chromaticity adjustment means which respectively correspond to the plurality of image display units and each perform a calculation using signal values of one of the plurality of color image signals to be input to a corresponding image display unit and adjust the chromaticity of an image to be displayed by the corresponding image display unit for each of primary colors red, green, and blue, separately.

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13. The multidisplay apparatus of Claim 12, wherein the chromaticity adjustment means includes:

a matrix operation means for multiplying the signal values of the received color image signal with a

25 determinant;

a parameter receiving means for receiving a predetermined parameter; and

a determinant changing means for changing the determinant in accordance with the received parameter, wherein

the chromaticity adjustment means adjusts the 5 chromaticity for each primary color by performing a calculation using the changed determinant.

14. The multidisplay apparatus of Claim 12, wherein the chromaticity adjustment means includes

10 a gamma correction means for performing a gamma correction on the color image signal, and

the chromaticity adjustment means performs a calculation using signal values of the color image signal on which the gamma correction was performed.

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15. The multidisplay apparatus of Claim 14, wherein

gradation conversion characteristics in the gamma correction means are substantially equal to gradation conversion characteristics required to correct gradation 20 reproduction characteristics of a display device of the image display apparatus.

16. The multidisplay apparatus of Claim 14 further comprising

25 an inverse gamma correction means for performing an inverse gamma correction on the color image signal output from the chromaticity adjustment means.

17. The multidisplay apparatus of Claim 12, wherein
the received color image signal is a YUV signal,
the image signal receiving means includes
5 a signal conversion means for converting the
received YUV signal into an RGB signal, and
the chromaticity adjustment means adjusts the
chromaticity for each primary color by performing a
calculation on signal values of the RGB signal.

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18. A chromaticity adjustment method for adjusting the chromaticity of images displayed by a multidisplay apparatus that allows a plurality of image display units to display a plurality of images side by side on a screen,
15 the multidisplay apparatus including a plurality of chromaticity adjustment means which respectively correspond to the plurality of image display units and each receive a parameter, perform a calculation using signal values of a color image signal in accordance with
20 the received parameter, and adjust the chromaticity of an image to be displayed by a corresponding image display unit for each of primary colors red, green, and blue, separately, the chromaticity adjustment method comprising:
25 a first step for inputting an image signal to each image display unit for each of primary colors red, green, and blue, allowing each image display unit to display an image, and measuring the chromaticity and the brightness

of the image displayed by each image display unit for each primary color; and

a second step for determining, in accordance with measured values of the chromaticity and the brightness, 5 the parameters to be respectively input to the plurality of chromaticity adjustment means so that chromaticity values of the images displayed by the plurality of image display units are substantially equal to each other for each primary color.

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19. The chromaticity adjustment method of Claim 18,
wherein

the second step includes:

15 a first sub-step for obtaining, from chromaticity values for each primary color, ranges of chromaticity that can be displayed by the plurality of image display units;

a second sub-step for obtaining a common chromaticity range which is common to the obtained ranges of chromaticity, and setting standard chromaticity values for each of red, green, and blue out of values belonging to the common chromaticity range; and

a third sub-step for determining the parameters so that chromaticity values of the images displayed by the plurality of image display units are substantially equal to the standard chromaticity values for each of red, green, and blue.